

In Situ Laser Diagnostics for Arc-Jet Facilities, Phase I

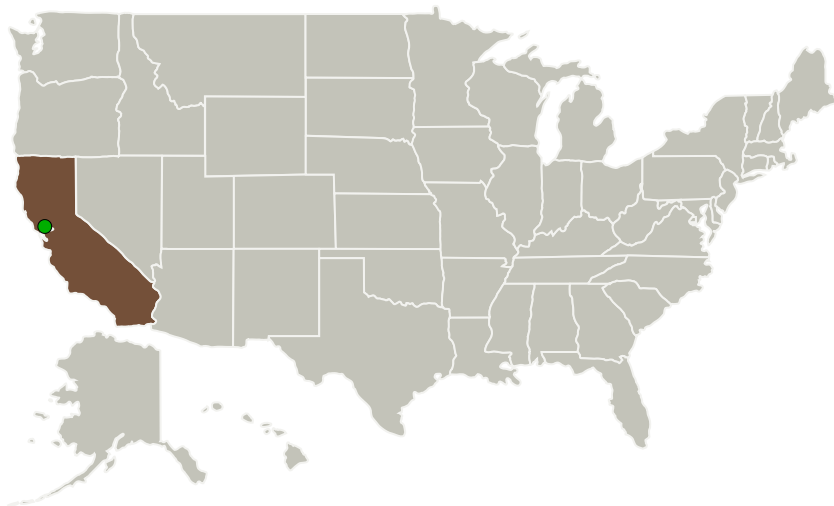
Completed Technology Project (2011 - 2011)



Project Introduction

In this SBIR Phase I effort, Los Gatos Research (LGR) proposes to develop novel instrumentation based on laser absorption spectroscopy techniques for ultrasensitive measurements of atomic and molecular concentrations as well as gas temperature and velocity in high enthalpy flows. These autonomous instruments, based on high resolution laser absorption spectroscopy, will provide highly accurate, real-time quantification of several important species and thus enable the validation and refinement of numerical physical and chemical kinetic models, facilities diagnostics, and eventual development of next-generation components and propulsion systems. In Phase I, the instrument will be fabricated and tested at LGR prior to integration onto a ground-based high enthalpy test facility at NASA Ames. The system will then be refined and delivered to a NASA test site. Final Phase I work will involve developing a Phase II prototype capable of making in situ measurements of multiple parameters in aerothermodynamics test facilities.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Los Gatos Research	Lead Organization	Industry	Mountain View, California
● Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations

California

Project Transitions

**February 2011:** Project Start**September 2011:** Closed out**Closeout Summary:** In situ Laser Diagnostics for Arc-Jet Facilities, Phase I Project Image**Closeout Documentation:**

- Final Summary Chart Image(<https://techport.nasa.gov/file/138632>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Los Gatos Research

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

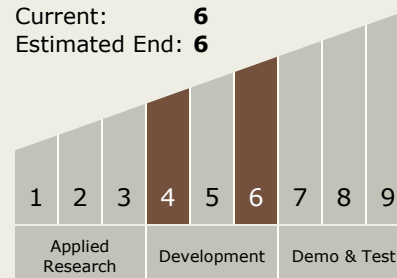
Doug Baer

Technology Maturity (TRL)

Start: 4

Current: 6

Estimated End: 6



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Technology Areas

Primary:

- TX13 Ground, Test, and Surface Systems
 - └ TX13.2 Test and Qualification
 - └ TX13.2.5 Flight and Ground Testing Methodologies

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System